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Williams, Patrick S., Major, USMC

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14. ABSTRACT

Operation OVERLORD undoubtedly achieved most of its operational objectives and firmly established the Allied armies on the European Continent. The operation was less than completely successful, however, in that the Supreme Headquarters Allied Expeditionary Force (SHAEF) and European Theater of Operations, U.S. Army (ETOUSA) brought avoidable friction and inefficiencies into the planning and execution of the campaign with respect to the unclear command structure imposed on the field armies and logistics units. Additionally, a poor supply requisition and distribution system created by the Communications Zone (COMZ) necessarily created an inflexible system unable to respond to a rapidly changing combat environment. Finally, SHAEF's decision not to seize key Brittany Peninsula ports and instead devote the bulk of the Twelfth U.S. Army Group (TUSAG) to the pursuit of the German Army across France resulted in the U.S. Army not being able to discharge supplies onto the Continent at a quantity and rate required to sustain the U.S. field armies. Proper adherence to basic tenets of the principles of war most certainly would have resulted in a swifter, less costly prosecution of OVERLORD for the Allies and may have resulted in the war ending in 1944.

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United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068

MASTER OF MILITARY STUDIES

TITLE: A MARINE CORPS LOGISTICIAN EXAMINES LOGISTICS PLANNING AND EXECUTION DURING OPERATION OVERLORD: A STUDY IN EFFECTIVENESS AND IMPLICATIONS FOR TODAY

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

AUTHOR: MAJOR PATRICK S. WILLIAMS, USMC

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Executive Summary

Title: A Marine Corps Logistician Examines Logistics Planning and Execution During Operation OVERLORD: A Study in Effectiveness and Implications for Today

Author: Major Patrick S. Williams, United States Marine Corps

Thesis: Unclear command and control relationships, poor supply planning and execution, and SHAEF's decision not to seize key ports on the Brittany Peninsula resulted in inadequate logistical support of the U.S. Army conducting combat operations during Operation OVERLORD and the culmination of their attack at the frontiers of Germany.

Discussion: From June through August 1944, the Allied armies fought a bloody campaign of attrition against the German Army in order to gain a foothold on the European Continent and attack across France and into Germany in order to end the European war. Operation OVERLORD undoubtedly achieved most of its operational objectives and firmly established the Allied armies on the European Continent. Ultimately, the sheer mass of men and materiel the Allies put forth on the Continent resulted in the culmination of Germany's war effort and that nation's subsequent defeat by the Allies in the spring of 1945. The operation was less than completely successful, however, in that the Supreme Headquarters Allied Expeditionary Force (SHAEF) and European Theater of Operations, U.S. Army (ETOUSA) brought avoidable friction and inefficiencies into the planning and execution of the campaign with respect to the unclear command structure imposed on the field armies and logistics units. Additionally, a poor supply requisition and distribution system created by the Communications Zone (COMZ) necessarily created an inflexible system unable to respond to a rapidly changing combat environment. Finally, SHAEF's decision not to seize key Brittany Peninsula ports as part of Operation CHASTITY and instead devote the bulk of the Twelfth U.S. Army Group (TUSAG) to the pursuit of the German Army across France in an attempt to annihilate it resulted in the U.S. Army not being able to discharge supplies onto the Continent at a quantity and rate required to sustain the U.S. field armies. Proper adherence to some basic tenets of the principles of war most certainly would have resulted in a swifter, less costly prosecution of OVERLORD for the Allies and may have resulted in the war ending in 1944.

Conclusion: U.S. Army logistics during Operation OVERLORD did not operate as effectively and efficiently as it could have. Little redundancy was built into the supply system. This necessarily required that all parts of the system had to function well if logistical support of the field armies was to be sustained. Ultimately, the poor command relationships amongst U.S. Army units in the ETO, inadequate supply requisition and distribution planning, and SHAEF's decision to not seize key ports required to support the logistical effort may have prolonged the European war and could have been mitigated by better planning and command and control.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Preface

This paper will address the effectiveness of U.S. Army logistics operations during Operation OVERLORD, from the critical June 1944 invasion of the Nazi held European Continent to the culmination of the Operation at the frontiers of Germany. Specifically, it examines the way that logistics proved to be a limiting factor to the advance of the Allied armies across France in 1944. The United States, despite the fact it had been engaged in two and one half years of war by the summer of 1944, had not yet undertaken a logistics effort on the scale of OVERLORD. Ultimately poor logistics planning and mistakes made during execution would undermine the Allied effort to fight the German Army on the Continent in 1944.

I researched and authored this paper in order to gain a better understanding as to how logistics at the operational level can influence combat operations. I believe that this paper is relevant to logisticians serving in the U.S. military today. Logisticians can learn from the mistakes and successes of logisticians during OVERLORD regarding their ability to execute the vital logistics warfighting function. It is true that clear command relationships, effective direct and general support, and proper supply planning and execution are timeless components of successful logistics operations.

The superb book *United States Army Logistics: The Normandy Campaign, 1944*, authored by Dr. Steve Waddell, provided me with a sound understanding regarding the effect logisticians had on the Normandy campaign. I attempted to expand on some of Dr. Waddell's arguments and add my own arguments with respect to the shortfalls in the execution of the massive logistics undertaking OVERLORD proved to be. Finally, I owe much thanks and gratitude to Dr. John Gordon for the guidance and mentorship he provided to me during the research phase and writing phase of this project.

"You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics."

General Dwight D. Eisenhower

Introduction

The Allied invasion of France in June 1944 and subsequent attack inland against the German Army was arguably the most complex military operation in the history of warfare. During Operation OVERLORD, the Allied field armies had to fight to gain a foothold ashore and then prosecute a campaign inland against strongly held German positions. The Germans would prove to give up ground grudgingly in the Normandy hedgerows, resulting in slowing the attack of the Allied armies and delaying their breakout from Normandy. In addition to the immense scale of combat operations conducted by the Allied armies during OVERLORD, the level of logistical support required to sustain the force was unprecedented. According to British Admiral Lord Louis Mountbatten, the challenge the Allied armies would face was to get ashore at Normandy, stay ashore, and finally build up combat power in order to fight their way across France against substantial German resistance.

As soon as the Allies gained a foothold in France on 6 June 1944, the logistics problem shifted from the build-up of men and materiel in the United Kingdom (U.K.), to how effectively and efficiently the Allied armies could be supported as they broke out from Normandy and advanced across France towards Germany. Eventually, the Allied attack culminated in September 1944 due to serious shortages of fundamental classes of supplies required to sustain a modern army, to include repair parts, ammunition, and petroleum, oil, and lubricants (POL). The irony of the perceived shortage was that the materiel was available in theatre, but inefficiencies and poor accountability in the supply and distribution system and lack of ports for offload of the supplies resulted in the required supplies not making it to the front lines at the time they were

needed. Additionally, the U.S. Army logistical command responsible for the planning and execution of OVERLORD was hampered by unclear command relationships and a multi-layered bureaucracy that resulted in inefficiencies and a power struggle amongst the Services of Supply (SOS) and the field armies. Despite the fact that OVERLORD planners acknowledged the need to seize key infrastructure in France in order to enable the logistics support effort, top commanders within the U.S. Army and Supreme Headquarters Allied Expeditionary Force (SHAEF) chose to forego seizure of key French ports, resulting in a bottleneck of supplies for offload onto the Continent. Unclear command and control relationships, poor supply planning and execution, and SHAEF's decision not to seize key ports on the Brittany Peninsula resulted in inadequate logistical support of the U.S. armies conducting combat operations during Operation OVERLORD and the culmination of their attack at the frontiers of Germany.

Background

Civilian leaders from the U.S. and Great Britain had planned to open a second front in northwest Europe for several years prior to Operation OVERLORD. The fundamental reason why the U.S. Army wanted to launch a cross-Channel invasion as soon as possible was because they believed that the destruction of the German Army in Europe should be the first objective of the Allied strategy.[1] By 1942, the U.S. was in no position to commit forces and personnel on the scale required for a cross-Channel invasion, as only two and one half infantry divisions and one armored division were available.[2] In 1943, due to competing interests in other theaters of the war and lack of air superiority over the Continent, the Allies were still not ready for the invasion, facing a German force of about 1.37 million men on the Continent.[3] After their failure to conduct the invasion in 1943, the Allies determined that the OVERLORD operation would go forward in the spring of 1944. The Allies established the Chief of Staff Supreme Allied Commander

(COSSAC), the supreme Allied command entity to plan the invasion prior to the Combined Chiefs of Staff establishing SHAEF in January 1944. The objective of OVERLORD was to secure a lodgment area on the Continent from which further offensive operations against Germany could be conducted. The lodgment had to contain sufficient port and beach facilities to sustain an initial force of 26 to 30 divisions and enable that force to be augmented by follow on supply shipments from the U.S. and additional combat forces and support units at the rate of three to five divisions per month.[4] The build-up of U.S. forces in the U.K. began in the fall of 1943 and continued at an average rate of about two divisions per month until May 1944.[5]

In June 1943, General George Marshall, U.S. Army Chief of Staff, implemented an administrative reorganization of U.S. forces in the U.K. in order to provide the framework for the command structure for OVERLORD. The Headquarters, European Theatre of Operations, U.S. Army (ETOUSA), would retain its role as the administrative headquarters for all U.S. Army forces in Europe. General Dwight D. Eisenhower assumed all responsibilities as commanding general of SHAEF in January 1944 as well as commanding general of ETOUSA. Tactically, U.S. Army forces would be controlled by the First United States Army (FUSA) under the command of Lieutenant General Omar Bradley. For OVERLORD, FUSA would initially fall under the operational control of the British 21st Army Group (AG) until such time as SHAEF established its headquarters on the Continent. The 21st AG was also primarily responsible for invasion planning. The OVERLORD command structure would remain in place until ninety days after the Normandy landing (D+90), with the 21st Army Group retaining operational control of all ground forces. After D+90, SHAEF would assume control. Bradley was also appointed as the commanding general of the First U.S. Army Group (FUSAG) which was stood up by SHAEF on 19 October 1943.[6] FUSAG would have operational control of FUSA on the

Continent as soon as a breakout occurred and the Third U.S. Army (TUSA) was stood up on the Continent. The name of FUSAG was changed to Twelfth U.S. Army Group (TUSAG) on 14 July 1944 as part of SHAEF's deception plan against the Germans, who were anticipating the main Allied invasion to occur at Calais and not Normandy.[7] The TUSAG headquarters moved to France in July 1944 and assumed command of FUSA and TUSA on 1 August 1944 (see Appendix A and Appendix B). Finally, the SOS would serve as the theater operational level logistics entity providing support to all U.S. armies in Europe. The SOS provided such services as medical, engineering, transportation, ordnance, POL, and quartermaster to the U.S. field armies.[8] As a result of the complex operational and administrative command relationships with the European Theater of Operations (ETO), Eisenhower in his role as Supreme Allied Commander (SAC) and commanding general of ETOUSA had two parallel planning staffs. The U.S. command structure in Europe relieved the field armies of supply and logistics concerns. The SOS would provide logistics functions for the field armies and fall under ETOUSA.

In May 1942, the SOS in the ETOUSA was organized in the U.K.[9] The mission of the SOS in the ETOUSA was to plan in detail and to operate the supply, transportation, and administrative services which served the U.S. Army theatre as a whole.[10] In June 1944, the SOS was designated the Communications Zone (COMZ) in order to differentiate the functions the SOS provided in the U.K. with what the COMZ provided on the Continent after D-day. In February 1944, COMZ established the Forward Echelon of the Communications Zone (FECZ) and Administrative Section of the Communications Zone (ADSEC) in order at assist the field armies with logistical planning and execution on the Continent.[11] FECZ was attached to the 21st AG for logistics planning. The ADSEC was attached to FUSA in order to serve as its direct support logistics entity during combat operations and bridge the gap between the planned supply

depots (base sections) to be established on the Continent and the advancing armies.[12] During the initial phase of combat operations, ADSEC would handle all logistical issues for FUSA until the creation of an army rear boundary, at which time FECZ would assume control of ADSEC and direct COMZ planning and activities. SHAEF's intent in establishing FECZ was not to create a separate command from COMZ, but to provide logistics planning liaison to 21st AG.

A compelling reason for SHAEF's selection of Normandy as the landing site for the Allied invasion was due largely to logistics considerations. Normandy had good beaches and terrain for airfield construction. Furthermore, it was in close proximity to the port of Cherbourg and other ports in northwest and western France crucial for the sustainment of the field armies and the shipment of reinforcements at the estimated rate of three to five divisions per month.[13] Once the Allied armies had penetrated the Normandy beaches, the invasion plan called for the FUSA and the British Second Army to thrust inland on a line running through Caen, St. Lo and northwest to Cherbourg (see Appendix C and Appendix D).[14] Once the ports on the Cotentin Peninsula and Brittany Peninsula were seized by the U.S. armies, the Allies would attack to the east towards Paris. The operation was to conclude on D+90 at which time the Allied force would have taken Paris, crossed the Seine, and would be regrouping for an advance on the Somme and the German frontier.[15] The execution of OVERLORD, however, was significantly different than what was planned. Once the invasion was launched, the Allied armies experienced substantial German resistance after gaining a foothold on the Normandy beaches. The major initial objectives for the FUSA was the build-up of men and materiel on the Normandy beaches and the thrust across the base of the Cotentin Peninsula to the west shore in order to isolate Cherbourg and then drive north to capture that vital port.[16] Stiff German resistance, however, resulted in Cherbourg not being captured by the FUSA until 26 June and not becoming operational until

mid-July due to extensive combat damage. Additionally, St. Lo, expected to fall by D+9, did not fall until D+48. The ports of Granville and Saint Malo were planned by SHAEF and COMZ to be operational by D+27, but remained in German hands until D+50.[17] The delay in capturing key ports required to support enable logistics would have a significant negative impact on operations.

The FUSA eventually broke out from the Normandy hedgerows in late June 1944 (see Appendix E and Appendix F). SHAEF developed a plan by which the FUSA and TUSA, by then under Bradleys' TUSAG command, would destroy the German forces west of the Seine River by executing a wide pincer movement toward Laval and Le Mans, followed by a swing to the northeast.[18] Simultaneously, the Second British Army and First Canadian Army were to attack to the south in order to cut off the Germans. This attack across the broad Allied front, however, resulted in SHAEF diverting combat power from the seizure of ports on the Brittany Peninsula crucial for the logistics effort. Instead of sending all of Patton's TUSA to attack into the Brittany Peninsula, only the U.S. Army VIII Corps was sent by Bradley as TUSA rapidly advanced towards Paris. Despite the fact that the Germans sustained severe casualties in the Falaise pocket in mid-August 1944, the decision by SHAEF to forego the seizure of key Brittany ports severely hampered the future U.S. Army logistical effort and resulted in attack culmination just short of the German frontier in November 1944.

Unclear Command and Control Relationships within SHAEF and ETOUSA

A large bureaucratic structure with unclear command relationships and functions adversely affected the decision making process of the U.S. field army commanders and COMZ commanders with respect to logistical support of the armies. On 27 May 1943, a COSSAC theatre directive established the SOS commanding general as the ETOUSA G-4. In early 1944,

Eisenhower made the SOS commanding general the ETOUSA deputy theatre commander.[19] Eisenhower delegated his functions of administration and supply to the deputy theatre commander and SOS commanding general, Lieutenant General John C.H. Lee, and directed that the authority to conduct the logistical planning for OVERLORD be based on the requirements of FUSAG (later TUSAG) under the general direction of 21st AG. Although SOS was not technically under the operational control of SHAEF, Eisenhower retained control in his dual role as SAC and ETOUSA commanding general. Lee's dual command role created conflicts of interest in the command structure which were often viewed with distaste by U.S. army field commanders. Additionally, Lee published orders and directives in his role as deputy theatre commander and SOS commanding general. Often these orders and directives contradicted one another and did not adequately separate the interests of SOS from the field armies within ETOUSA. Though initially confident in Lee's abilities, Eisenhower before long began to have reservations about Lee. Eisenhower often became angry with Lee because Lee issued orders in Eisenhower's name without consulting him. Moreover, field commanders lacked confidence in Lee's abilities to serve in his dual role, believing he did not focus enough effort to supporting them and their combat troops. This perception caused field commanders to increase their supply requisitions and hoard supplies and thereby led to further supply shortages.[20]

Eisenhower's rationale for the command arrangement concerning SOS and ETOUSA was that he believed that all U.S. Army field forces in Europe should be administered by one supreme headquarters so that the burden of administrative and logistical issues could be taken over by ETOUSA and SOS. Eisenhower went further in 1944 by consolidating the staffs of ETOUSA and SOS into one. Eisenhower's reorganization met opposition from U.S. commanders and staffs, as it saved manpower but did not reduce the staff workload. After the consolidation, field

army commanders felt that the ETOUSA and SOS staffs were over tasked and could not provide them with adequate and responsive logistical support.[21] In theory, ETOUSA became the top echelon command for all U.S. forces in Europe. Practically, however, the ETOUSA staff was also the SOS staff. What resulted was no higher U.S. headquarters in the ETO to arbitrate differences between the FUSAG and SOS over differences regarding logistics planning. FUSAG objected to the fact that Lee, in his dual command roles, held too much power over the allocation of supplies to the field armies.[22] Additionally, the FUSAG warfighting staff sections (G-2 and G-3) looked for direction from SHAEF rather than ETOUSA with respect to planning, while the FUSAG G-4 sought direction from ETOUSA. This resulted in inefficient and stove-piped planning of logistical support requirements. The ETOUSA and SOS command relationships established by Eisenhower caused significant delays in the decision making process with respect to logistical planning. Additionally, by some FUSAG staff sections consulting directly with SHAEF instead of ETOUSA for administrative and logistical issues, SHAEF became overly concerned with U.S. Army issues rather than Allied issues. Although the ETOUSA and SOS command structure conflict was eventually resolved by Eisenhower, the damage had already been done with respect to the negative view of Lee by the army field commanders.

In order to further ease the burden of logistical planning for the FUSAG, Eisenhower directed that COMZ establish the FECZ liaison element to work with the British 21st AG for logistics planning. The major issues that developed with respect to FECZ's authority, however, created unnecessary friction between SHAEF and FUSAG during the planning phase of OVERLORD. The need for the establishment of FECZ by COMZ from the point of view of Eisenhower was for an executive agency to establish itself early on the Continent prior to the establishment of COMZ.[23] The mission of the FECZ was to perform and supervise both planning

and operations in connection with COMZ activities for the entire OVERLORD operation in close consultation with 21st AG and FUSAG.[24] SHAEF directed that COMZ appoint a deputy commanding general and attach him and a small staff to the 21st AG under the oversight of FUSAG G-4 for logistical planning. Lee, however, interpreted SHAEF's direction to mean that FECZ would have its own commanding general and therefore have authority equal to FUSAG with respect to logistics planning. Moreover, COMZ referred to FECZ as a separate command headquarters instead of a subordinate liaison element of COMZ attached to 21st AG with no command authority. FUSAG assumed that FUSAG G-4 had the authority to direct FECZ since FECZ fell under FUSAG G-4 for liaison and planning purposes with 21st AG. FECZ did not recognize this command relationship and bypassed FUSAG on logistical matters and went directly to COMZ.[25] Eventually SHAEF made it clear to COMZ that FECZ was not a separate command and therefore did not rate any command authority. This further confused the issue because COMZ's operational plan directed FECZ to assume command authority of all COMZ forces (to include the Base Sections and ADSEC) on the Continent from D+41 to D+90.[26] Lee's intent was that FECZ, in its role as a command tied to COMZ but equal to FUSAG, would ideally fill the role as the senior logistics command headquarters on the Continent until COMZ moved from the U.K. to France. FUSAG, however, did not share the same view regarding FECZ's authority and were supported in this belief by SHAEF directives. Ultimately, FECZ never assumed any command authority on the Continent as it was absorbed by COMZ.

The Allied experience in North Africa taught the U.S. Army that a direct support logistics element attached to the combat units they were supporting was vital to providing timely logistical support to the armies as they moved inland. As a result, SHAEF established ADSEC whose mission was to prepare logistical plans for the logistical support of FUSA (ADSEC was

assigned the same mission by SHAEF to support TUSAG once TUSAG became operational on the Continent) and to execute COMZ functions on the Continent until such time as an army rear boundary was declared.[27] The fundamental problem with ADSEC, however, was that the principal of unity of command was not followed. ADSEC was attached to the FUSA and was to receive orders only from the FUSA. From D+13 to D+45, ADSEC was given the authority by SHAEF to plan U.S. logistical requirements and procurements for all U.S. forces. Therefore, ADSEC was to operate separately from FECZ. FECZ, however, viewed itself as a higher command to ADSEC and the sole representative of COMZ. Consequently, during the planning phase for OVERLORD, FECZ issued orders to ADSEC when it had no authority to do so. This caused confusion amongst ADSEC staff when they tried to balance the requirements of FUSA, who they were directed to support and took orders from, with FECZ interference and unauthorized orders. ADSEC arrived on the Continent on D+8 and gradually took over the logistics functions from FUSA before a rear boundary was declared by FUSA. ADSEC remained in control of the COMZ mission on the Continent until COMZ took over on 7 August 1944, as FECZ was eventually absorbed by COMZ.[28] SHAEF established ADSEC to support FUSA and later TUSAG, yet ADSEC was in practice not under the control of the headquarters it supported but rather the COMZ supply headquarters from which it drew support. Moreover, the services of supply chiefs within COMZ felt that ADSEC overstepped its authority by taking issues directly to the Office of the Chief Quartermaster in Washington, D.C. They felt that ADSEC had the necessary power commensurate with its direct support mandate to provide direct support logistics to the FUSA and should have gone through COMZ for all logistical matters. In essence, ADSEC had a direct support relationship with FUSAG, but was controlled by COMZ and administered by FECZ during the planning phase of OVERLORD. This caused much

confusion and resentment amongst all elements of COMZ and further complicated an already complex logistical planning problem. Ultimately, both COMZ and ADSEC were subordinated directly to SHAEF, with the end result that General Bradley could ask for supplies to be divided amongst his armies, but he was unable to order it.[29]

Poor Supply Planning and Execution

In addition to complex and unclear command relationships amongst SHAEF forces, the logistical effort to support OVERLORD was also handicapped by substantial supply problems. One of the most difficult aspects of determining supply requirements for an overseas theatre of operations is the resupply requirements for major items of equipment and personnel, as well as forecasting the ammunition requirements of the combat forces.[30] Logistics planners estimated over one million tons of equipment would be required on the Continent within the first 17 days of the Normandy campaign.[31] By 4 September 1944 (D+90), two million Allied troops and close to 3.5 million tons of supplies had been landed in France, with the lines of communication (LOC) stretched thin.[32] The COMZ faced the substantial problem of moving all classes of supply overland from the beaches and ports in order to sustain the advance of the combat forces. Initially, the most serious logistical problem facing COMZ was the fact that the FUSA was not advancing as rapidly as COMZ had planned. The numerous hedgerows, difficult terrain, poor weather, and stiff German resistance resulted in U.S. forces becoming bogged down in Normandy and consuming much more ammunition than had originally been planned for by COMZ.[33] After the TUSAG breakout from St. Lo, the U.S. Army spearheads were at times moving in excess of 75 miles per day and required 200 tons of supplies for sustainment.[34] After the breakout, supplying the TUSAG armored and mechanized units with adequate fuel to maintain their advance became the critical vulnerability of the supply system.

The entire fuel resupply plan developed by COMZ was based upon the timely seizure of Cherbourg and other Channel ports so that fuel could be initially piped ashore from the U.K. and eventually offloaded via tankers. Construction of the first POL pipeline began on 10 June and the first fuel was pumped ashore on 23 June.[35] This fuel, however, was delivered only to the minor port of Port-en-Bessin, which did not have the capacity to sustain the enormous fuel demands of the armies. COMZ had planned for the fuel discharge and pump capacity at Cherbourg to be the major component of the POL pipeline system in France. Cherbourg, however, was not captured by the FUSA until the end of June and not able to substantially process POL until late July, thereby severely hampering the ability of COMZ to provide combat forces with adequate POL. Approximately 7 million long tons of POL were stored in the U.K. for the Allied armies in Europe, yet distributing that fuel to the warfighter presented logistics planners with the single largest logistical issue of the war.[36] COMZ's plan for distributing the fuel once ashore was fundamentally flawed due to its overreliance on the timely seizure of ports and reliance on a complicated distribution system to combat units. Part of the distribution plan called for combat units to bring empty 5-gallon jerricans to fuel distribution points. The combat units would then receive a full 5-gallon can in return. In practice, however, units lost many more cans than was planned for by COMZ, resulting in a severe shortage of jerricans. Additionally, COMZ had planned for 30-miles of six inch pipe to be laid per day in order to move the pipeline forward with the advancing armies (see Appendix G). Once new pipe was laid by engineer crews, however, it took ten hours to fill the newly laid pipe, requiring shutting down the entire pipeline and decanting points and losing fuel throughput capacity that could not be recovered.[37] Since units often needed fuel immediately and could not wait for the decanting points to become

operational again, ADSEC was forced to divert ground lift in order to move fuel instead of other classes of supply, thereby causing additional shortages.

Once OVERLORD began, COMZ planners could do little to respond if ammunition shortages existed for U.S. forces. The lead times required to procure and manufacture various types of ammunition and transport it to the ETO resulted in little flexibility to adjust to changing requirements beyond emergency resupply. For the ordnance plan to succeed, the estimated type of rounds and expenditure rates had to match what had been forecasted by COMZ in April. Ordnance planners believed that stockpiles of ammunition would accumulate at the beaches and ports and would be able to be effectively moved inland by transportation assets to the combat forces. This assumption, however, proved to be false as ADSEC and COMZ's inability to quickly and efficiently offload ships and move the ammunition forward to the combat units severely degraded the ammunition resupply effort.[38] The ammunition that was offloaded was often poorly accounted for by ADSEC at the Base Sections. This resulted in combat units perceiving that a large scale ammunition shortage existed, when in fact the ammunition was at times merely unaccounted for by COMZ and ADSEC in a depot far from the front lines. Moreover, the ammunition that was moved to the combat units by ADSEC suffered from defects, to include defective artillery powder increments, resulting in artillery and mortar units firing shells too long or too short.[39] By 15 July, ammunition reserves within TUSAG had reached a critically low level and Bradley ordered all TUSAG units to ration ammunition (see Appendix H).[40] By 28 July, the ammunition shortages had become even more severe. Ammunition was severely rationed for those units not conducting offensive combat operations so that ammunition could be redistributed to those pursuing the Germans across France.[41] By D+90, the inability of

COMZ to properly account for supplies and move ammunition forward to combat units was one of the main reasons for TUSAG's cessation of offensive combat operations.

Poor accountability of supplies by U.S. field armies, ADSEC, and COMZ during OVERLORD severely degraded the logistics operations. The stock control system did not work as logistical planners had anticipated. The physical volume of supplies was so great that all efforts were taken to move supplies inland and off of ships with little regard for properly accounting for those supplies.[42] Furthermore, while FUSA was in charge of supply storage and accountability during the early phase of OVERLORD, logisticians within FUSA ran the supply system loosely. FUSA viewed the stockpiling of supplies as the primary focus of effort and therefore did not properly account for the supplies they received from the Normandy beaches and the ports in northwestern France. Additionally, ADSEC advanced closely behind FUSA with a focus on keeping the army moving and therefore did not have a vested interest in establishing adequate supply accountability procedures.[43] Once COMZ established its headquarters on the Continent, it fell in on disorganized supply depot locations the FUSA and TUSAG had advanced through and had to spend much time and manpower in getting those locations back to a fully functioning operational level. The first time that definitive and detailed knowledge of supplies at the dumps became available on the Continent was on 18 August after COMZ directed the chiefs of services to conduct complete inventories.[44] Fundamentally, COMZ supply accountability could have been improved if COMZ had established and followed a method of supply accountability and documentation that U.S. combat forces were able to easily employ. Additionally, by prioritizing duties for COMZ troops to focus on accountability instead of other tasks not related to supply, accountability could have been improved. COMZ also faced challenges distributing supplies of the proper class and quantity to those who needed them.

Prior to the beginning of OVERLORD, COMZ planners had forecasted a slow build-up and incremental advance of U.S. forces across France, not the rapid drive across France that occurred after the FUSA breakout from St. Lo. The breakout resulted in the further stressing of an already overburdened distribution network. Due to poor accountability and requisition procedures for classes of supply, the correct kinds of supplies were not moved forward to the front lines. Additionally, due to the fact that Cherbourg did not become fully operational until mid-July instead of the planned time of mid-June, supplies were discharged over the Normandy beaches by ADSEC and COMZ for a longer period of time and in greater quantities than logistics planners had estimated. The need for ADSEC to rapidly offload the multiple Landing Ship Tank (LST) ships discharging supplies over the beaches resulted in classes of supplies being offloaded by logistics personnel that were not needed by frontline units. For example, during the height of the ammunition shortage experienced by TUSAG on 20 July, a quartermaster base depot company reported the arrival of 11,070 corn brooms and 12,789 cotton mops for distribution to combat forces.[45] Undoubtedly the lift used to move brooms and mops onto the Continent and then inland to a base depot could have been better used to move ammunition to TUSAG combat units. Moreover, TUSAG units had to use their own trucks designated to transport troops to transport supplies. Consequently, combat units required significant lift augmentation from ADSEC to move troops forward for the combat units as the front advanced to the east. By ADSEC substantially augmenting TUSAG with trucks, few were left available to build up army service areas and supply depots.[46] Eventually, to meet the lift requirements needed to support distribution of supplies to TUSAG, COMZ established the Red Ball Express. At its height, the Red Ball Express included 132 truck companies with 5,958 trucks, and a circular run that eventually reached 700 miles.[47] Overall, the Red Ball Express

significantly enabled COMZ's supply distribution effort. Numerous problems existed, however, within the Red Ball Express regarding organization, maintenance, and the proper use of personnel. The trucks were operated by COMZ nearly 24-hours per day with little time or effort put forth on the part of maintenance personnel to repair the trucks. Instead, many were discarded in the interest of time when they should have been repaired. Additionally, only 30 percent of the trucks on the route moved in convoys, with the rest moving individually.[48] This convoy practice resulted in inefficiencies with respect to COMZ's allocation of maintenance support and security personnel. COMZ's distribution system, though continually strained to the breaking point, managed initially to barely keep up with the rapidly advancing combat forces after the breakout from St. Lo. By September 1944, the distribution system was unable to make up for lost lift and other failures resulting from poor supply accountability and a broken requisition process.

The requisition process from armies in the field via COMZ to national sources of supply in the United States was lengthy, both in time and distance. During World War II, order and shipping time took at least four months from the time a requirement was identified by the using unit to when it arrived in the ETO.[49] If logistical planners did not correctly estimate the quantity of supplies required and consumption rate of those supplies, they had little room to adjust due to the rigid and detailed requisition process. It is true that COMZ planned for emergency resupply on an as required basis, yet only 100 tons of shipping per day (less than one percent of the supplies unloaded as of D+12) was set aside for emergency purposes.[50] The significant shortages encountered by TUSAG in late June 1944 and throughout July 1944 resulted mostly from planning errors and distribution shortfalls. At times, troops had to resort to barter to get the supplies they needed. For example, a battalion of the U.S. Army 35th Infantry Division traded captured German machine guns and Luger pistols with COMZ rear area personnel in order to get

the light automatic weapons required for the battalion's tactical mission.[51] The lack of a uniform system to inform the field armies regarding the shipping or backorder status of their requested item was a major flaw in COMZ's requisition process. If units did not receive a requested item in a timely manner, they ordered the same item and quantity again. This resulted in compounded delays as duplicate items had to move through an already overburdened supply system. The entire supply system came close to failing due to a lack of safety factors in the form of reserve supplies. Moreover, little redundancy was built into the supply system by COMZ and was further negatively impacted by lack of adequate French ports required for the offload of the massive amount of supplies required to sustain U.S. forces.

Heavy German resistance encountered by TUSAG resulted in significant delays in seizing key ports in France and severely degraded COMZ's logistical support plan. Cherbourg, arguably the most important port in Normandy, began operating six weeks behind schedule and took several more weeks to reach its scheduled capacity of 6,000 tons of supplies per day (see Appendix I).[52] The delay in TUSAG taking Cherbourg necessarily resulted in COMZ having to offload additional supplies across the Normandy beaches, which was a much slower process than offloading supplies at ports with an established infrastructure. This was further complicated by the fact that many of the ships that COMZ offloaded over the beach due to the delay in seizing Cherbourg had been loaded in the U.K. by SOS personnel under the assumption they would be offloaded at a French port and not across the Normandy beaches. Additionally, logisticians had planned for troops and materiel to be shipped directly from the east coast of the U.S. to French ports once they were liberated by the Allied armies. Due to U.S. Army delays in taking the ports and the damage done to the ports by the Germans, many of the ships planned for port offload had to be diverted to or return back to the U.K., offloaded via the Normandy beaches, or wait their

turn to be offloaded at the few ports ready to receive cargo in France. Such delays could have been avoided if planners had loaded ships in a uniform manner for discharge at port facilities or over the beaches. Additionally, COMZ failed to communicate with Army Service Forces (ASF) in the U.S., the entity that set the shipping schedule, regarding the backlog of ships waiting to offload their cargo. The limited capacity of the British ports to receive the shipping diverted to them from the Continent further aggravated the port congestion problem. Cargo manifested for the Continent was offloaded at British ports and never made it across the Channel to the combat units. By the time of the FUSA breakout from St. Lo, the only operating harbors were Cherbourg and the artificial Mulberry "A" harbor belonging to the British at Arromanches, as the U.S. Mulberry "B" was destroyed by a Channel storm in mid-June.[53]

SHAEF's Decision not to Seize Key Ports

During the early phases of OVERLORD, SHAEF had planned for Patton's 3rd Army, once operational under TUSAG, to seize the Brittany Peninsula in order to secure key English Channel and Atlantic Ocean ports required to sustain TUSAG as they drove across France towards Germany. The capture of the Normandy and Brittany ports by TUSAG was deemed necessary by SHAEF in order to support the 30 U.S. divisions planned to be established on the Continent by the end of OVERLORD.[54] After the FUSA breakout at St. Lo, however, Eisenhower and Bradley agreed that most of Patton's 3rd Army should be used to cut off and encircle the Germans, forcing them to face northward against the 21st AG attacking to the south, and potentially result in a decisive victory.[55] As a result, Bradley sent only VII Corps under Major General Troy Middleton to capture ports on the Brittany Peninsula. Due to the reduced attacking force, the number of ports to be seized by VII Corps was reduced from those that had been planned for capture by Patton's entire 3rd Army. The operation on Brittany, named

CHASTITY, called for the delay in the capture of the ports at Nantes and St. Nazaire and the capture of the major port facility at Quiberon Bay on the south coast of the peninsula. Quiberon Bay's value lay in the fact that it had 3,000 yards of suitable beaches and sufficient anchorage for 200 liberty ships.[56] Logisticians assured TUSAG and SHAEF that they could sustain the attacking armies with only the ports of Brest, Quiberon Bay and Cherbourg. These assurances, however, proved false as all of those ports were not seized or seized at the end of OVERLORD when their seizure was largely irrelevant. Operation CHASTITY was cancelled before it was implemented due to the fact the majority of TUSAG had already advanced to the east in pursuit of the German armies. By the time the German defenders around Quiberon Bay were defeated by the small force TUSAG devoted to the attack, the port was irrelevant due to the distance from the port the Allied armies had advanced. The Allies had essentially outrun the logistical support that was being funneled in through few usable ports on the Brittany Peninsula, held on to well into OVERLORD by isolated and fierce German resistance.[57] Additionally, Brest did not fall until 19 September, but the damage done to the port by the retreating Germans was so extensive it was never used by the Allies. SHAEF gambled that the effect resulting from the devotion of the majority of TUSAG to pursuing the Germans across France and destruction of a large portion of the German force in the Falaise Gap would be so great, that Germany could be defeated before lack of logistics stopped the Allied advance. SHAEF's belief that a decisive victory against the German army would end the war was consistent with the overall American strategy of annihilation to end the European war. Instead of devoting all of TUSA to annihilating the German army, SHAEF and TUSAG should have devoted a larger force to seize the necessary ports on the Brittany Peninsula required to support the logistical requirements of the armies. By the time of the St. Lo breakout, only the port of Cherbourg and the Normandy beaches were

operational on the Continent to receive supplies. Moreover, there was a large disparity between the planned capacities of the ports that were seized versus the actual capacities once in operation by D+120 (see Appendix J). The rate of consumption of supplies by TUSAG after the breakout was much higher than the rate during the static fighting in the Normandy hedgerows. Where once COMZ could manage to sustain the forces with limited operational ports during the first phases of Normandy, as the armies began to advance swiftly across France the port capacity in use was unable to support the supply needs of the armies. For example, in September 1944 only 95 ships out of 175 scheduled for discharge on the Continent were unloaded.[58] Failure to conduct Operation CHASTITY and seize follow on ports on the Brittany Peninsula may have prevented an Allied victory over Germany in 1944.

Conclusion

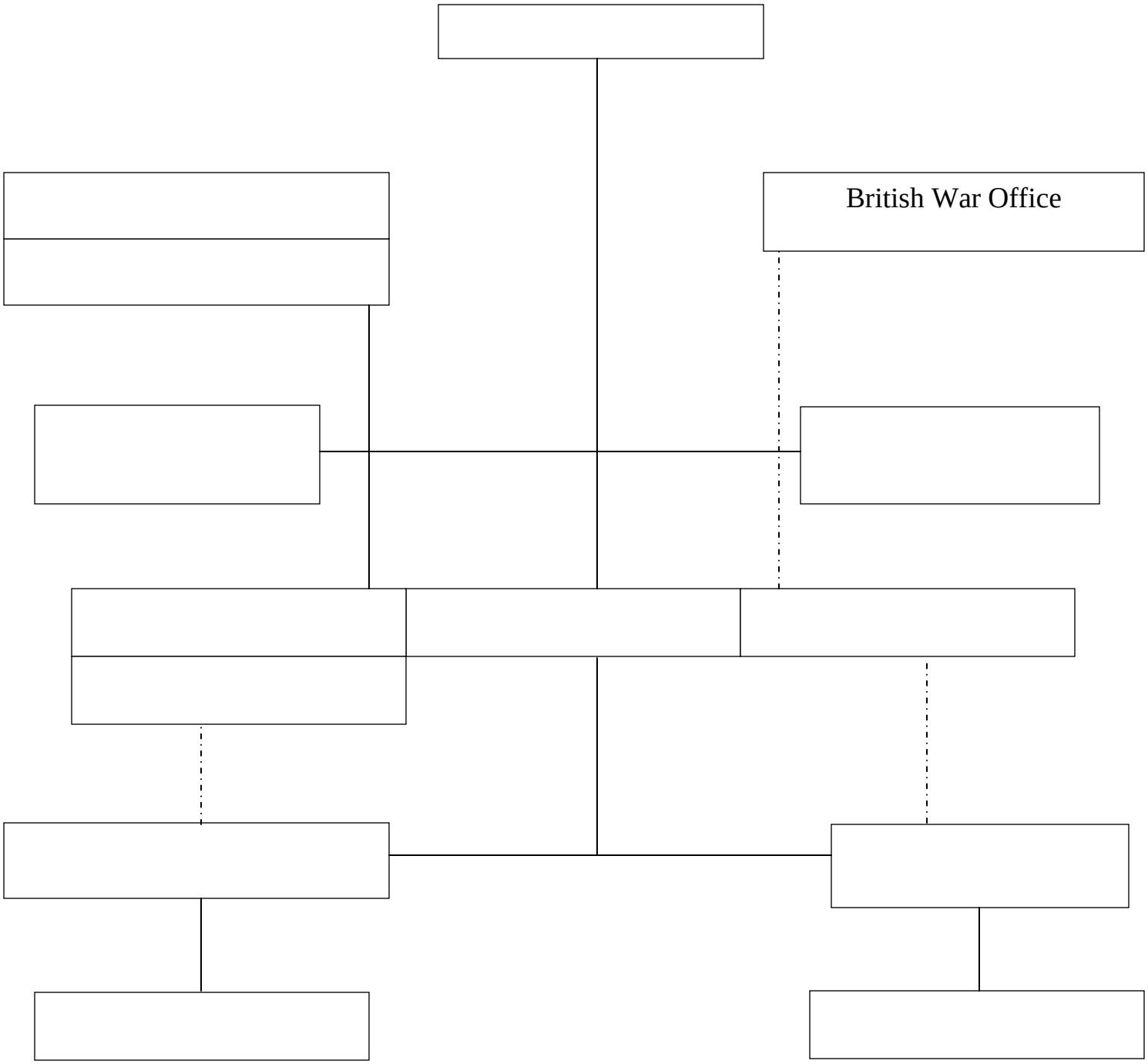
Unclear command and control relationships, poor supply planning and execution, and SHAEF's decision not to seize key ports on the Brittany Peninsula resulted in inadequate logistical support of the U.S. armies conducting combat operations during Operation OVERLORD and the culmination of their attack at the frontiers of Germany. Command relationships between ETOUSA, COMZ, and the field armies established by SHAEF remained unclear at the beginning and during the initial phases of OVERLORD. Once the armies were on the Continent, the inflexible supply requisition and distribution system left little room for adjustment as combat operations conducted by FUSA and TUSAG against the Germans were not executed as planned. Once the FUSA achieved breakout from St. Lo, the supply system became even more strained as critical supplies could not be delivered from the limited ports to the rapidly advancing armies due to the breakdown of the requisition and distribution system. Additionally, disparity in the movement rates of TUSAG most assuredly had the greatest impact on the

logistical effort of the OVERLORD campaign. By D+50, the Allies were still stuck in the Cotentin Peninsula and bogged down in a grueling fight against stiff German resistance instead of controlling the entire Brittany Peninsula; on the other hand, by D+120 the Allies had already reached the D+270 phase line and were outrunning their sustainment.[59] Finally, the decision made by SHAEF to cancel Operation CHASTITY and not seize key Brittany Peninsula ports ultimately exacerbated the strain on an already fragile logistical system. By SHAEF deciding not to secure additional ports needed to offload much needed supplies for the movement of forces inland, the U.S. combat units could not be sustained due to the breakdown in the requisition and distribution process for already offloaded supplies.

The OVERLORD campaign offers several lessons learned for the professional military logistician. As in any military organization, unity of command is a vital principal of war that must be followed in order to achieve unity of effort and enable success. Unity of command was clearly not followed during OVERLORD, as is evident by the disjointed and unclear command relationships established by SHAEF for subordinate commands. Clear command relationships must be in place not only during the execution of combat operations, but also during the planning phase of operations. Moreover, the concept of logistical support with respect to requisition and distribution of supplies must be a simple process for both the combat units who orders and consumes the supplies, and the logistics units who receive and distribute them. Combat units already subject to high stress levels due to sustained operations will not devote much time or pay careful attention to properly utilizing supply procedures if those procedures are not simple for them to use. From an operational planning perspective, commanders and planners must ensure adequate resources are allocated towards capturing objectives that will aid the overall logistical effort of the campaign in order to ensure combat units remain adequately supplied.

Logisticians must adequately plan for support in the event of contingencies to ensure uninterrupted logistics support if combat operations do not go as planned. This was true in 1944 and it is still true today in operations up to Marine Expeditionary Force (MEF) or corps size formations and beyond. Establishing alternative methods of resupply in the event of a contingency will necessarily result in logistical support not forcing the culmination of combat operations. Furthermore, it is imperative that higher headquarters clearly establishes and defines the relationship between the direct support logistics unit and the combat unit it supports in order to enable uninterrupted logistical support. If higher headquarters does not clearly define this relationship or it conflicts with another command relationship, logistical support to the warfighter will not be nearly as efficient or responsive as it would otherwise be. ADSEC's direct support relationship with FUSA and TUSAG is an example of the effectiveness of the timely logistics support a direct support unit can provide to combat units. ADSEC functioned less effectively as it could have, however, due to unclear command relationships set in place by SHAEF. Finally, it is imperative that logisticians ensure that they are responsive to the supply needs of combat units and do not merely push forward supplies that are either inadequate in quantity or not required to sustain operations. Ultimately the logistician must take care to ensure that inefficient command organization and poor requisition and distribution procedures do not result in inadequate logistical support to the warfighter and adversely affect his or her ability to defeat the enemy.

Appendix A: OVERLORD Task Organization for Planning and First Phase

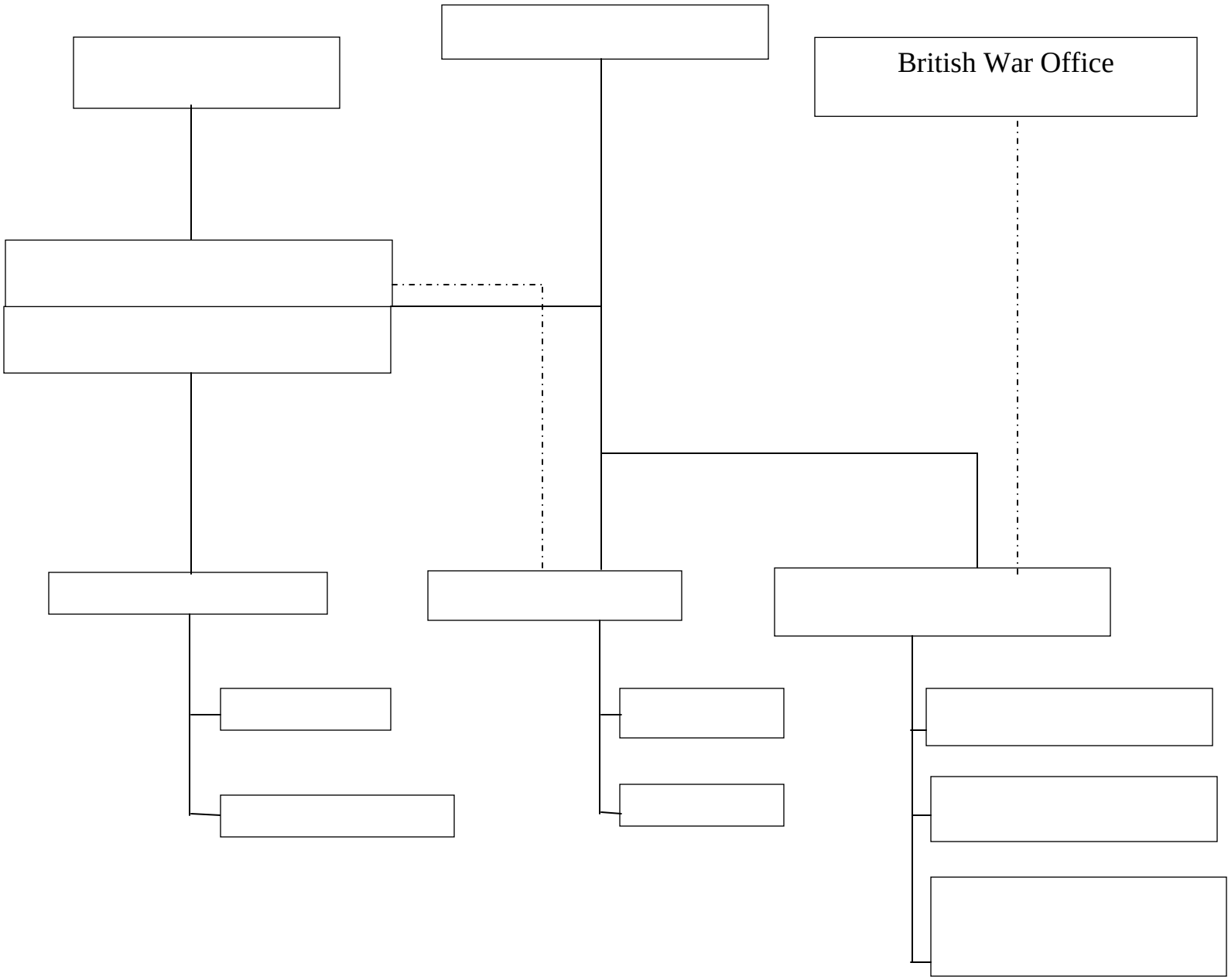


Source: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 17.

Operational Control

Administrative Control

Appendix B: Operation OVERLORD Planned Task Organization When TUSAG Became Operational

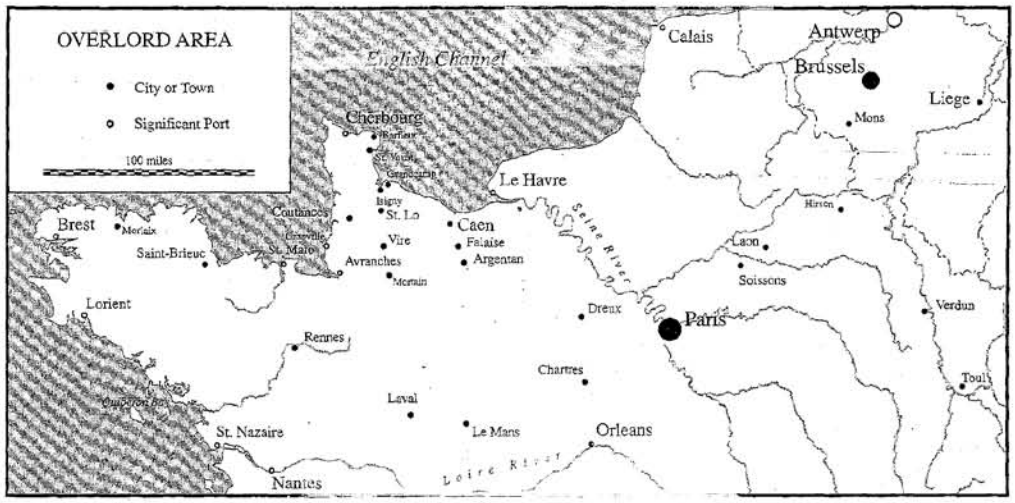


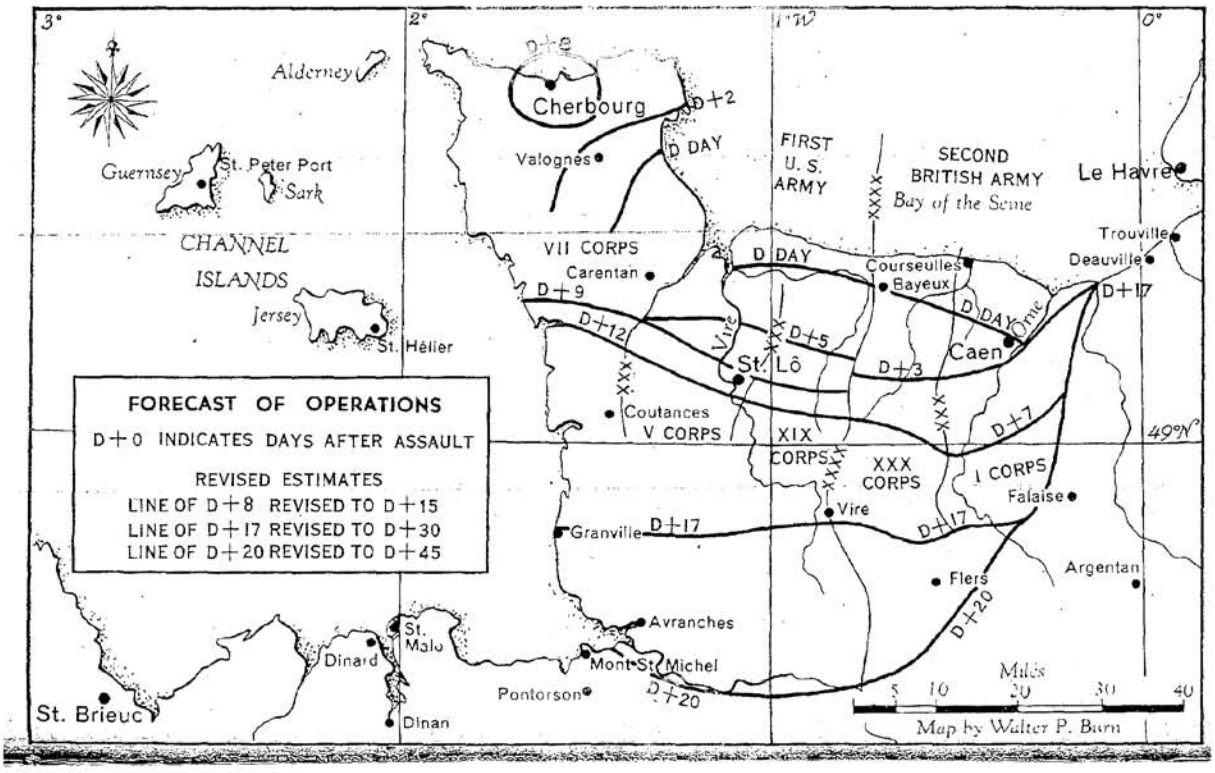
Source: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 17.

Operational Control

Administrative Control

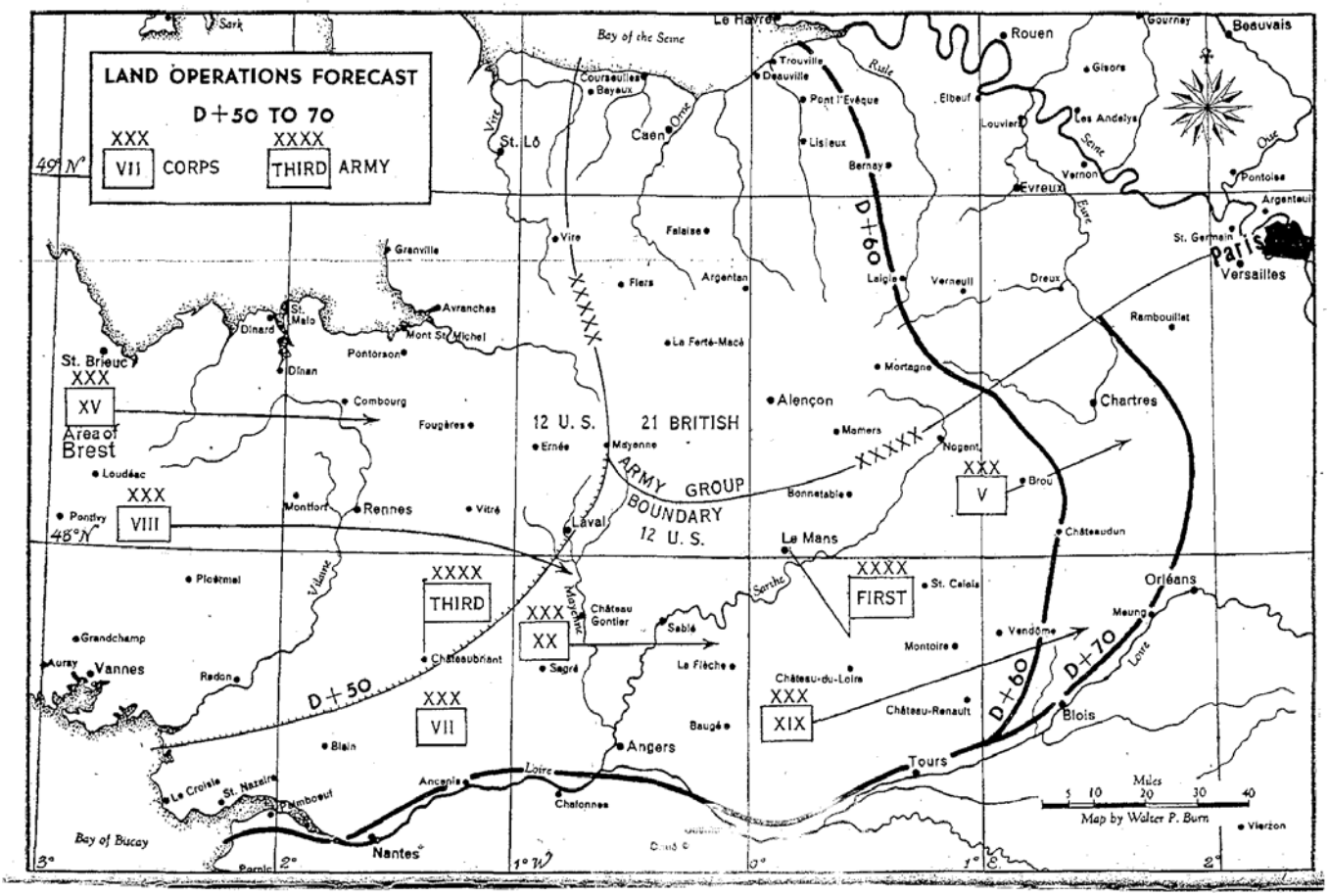
Appendix C: OVERLORD Operational Area and Planned Allied Advances to D+45





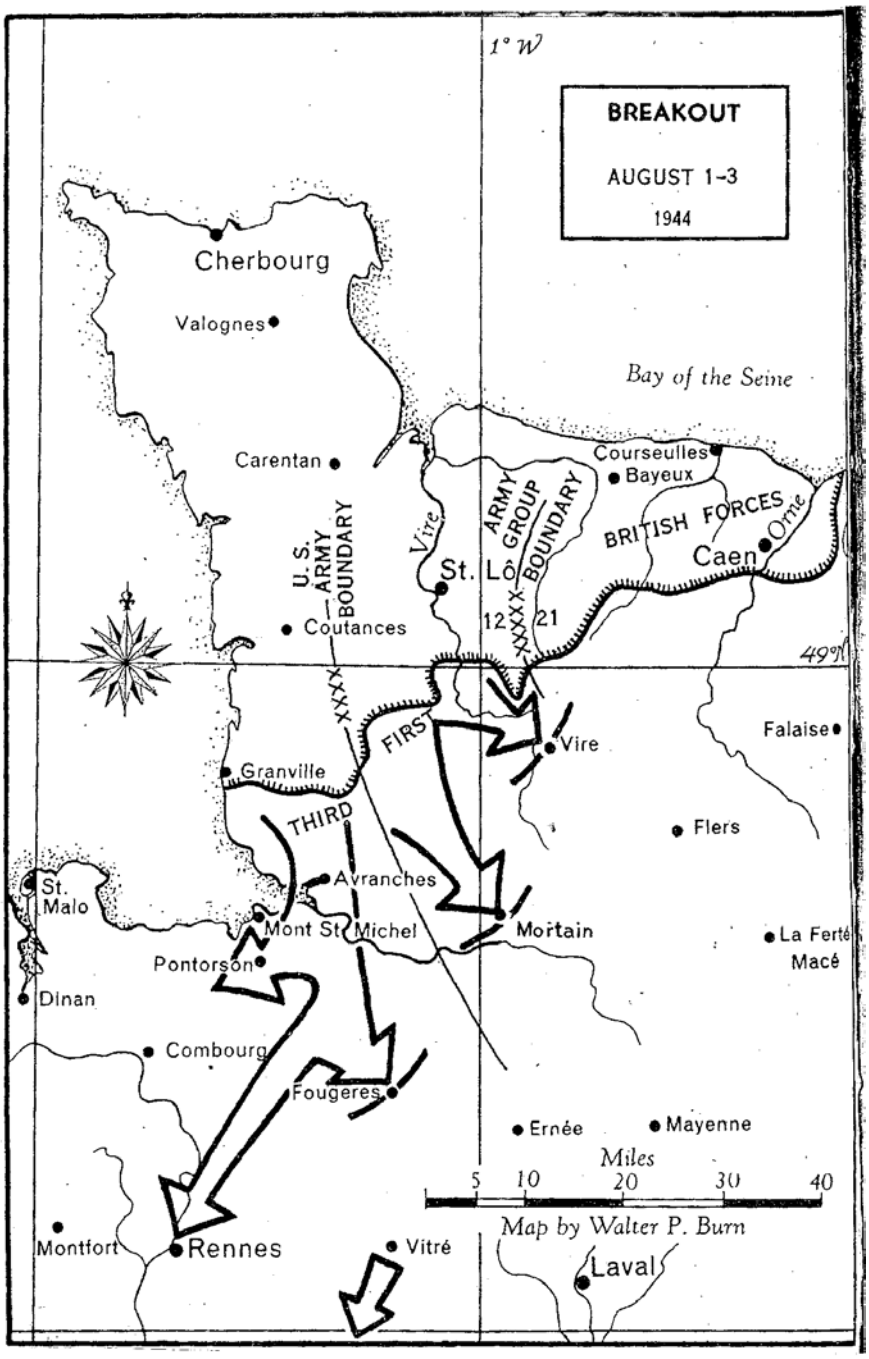
Sources: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 32, and Albert Norman, *Operation Overlord: Design and Reality* (Harrisburg, PA: the Military Service Publishing Company, 1952), 114.

Appendix D: Planned Allied Advance to D+70



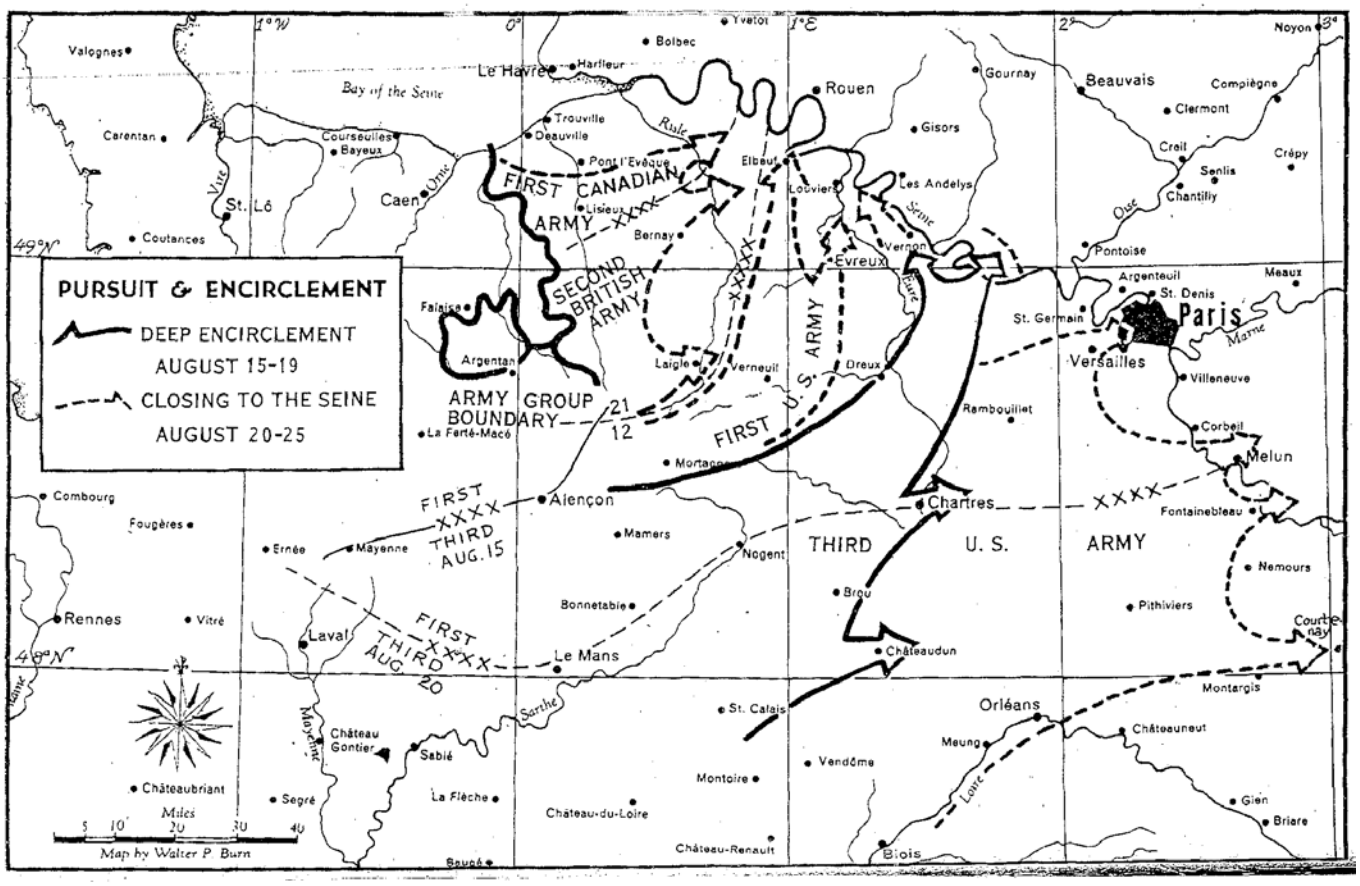
Source: Albert Norman, *Operation Overlord: Design and Reality* (Harrisburg, PA: the Military Service Publishing Company, 1952), 118.

Appendix E: Breakout from St. Lo



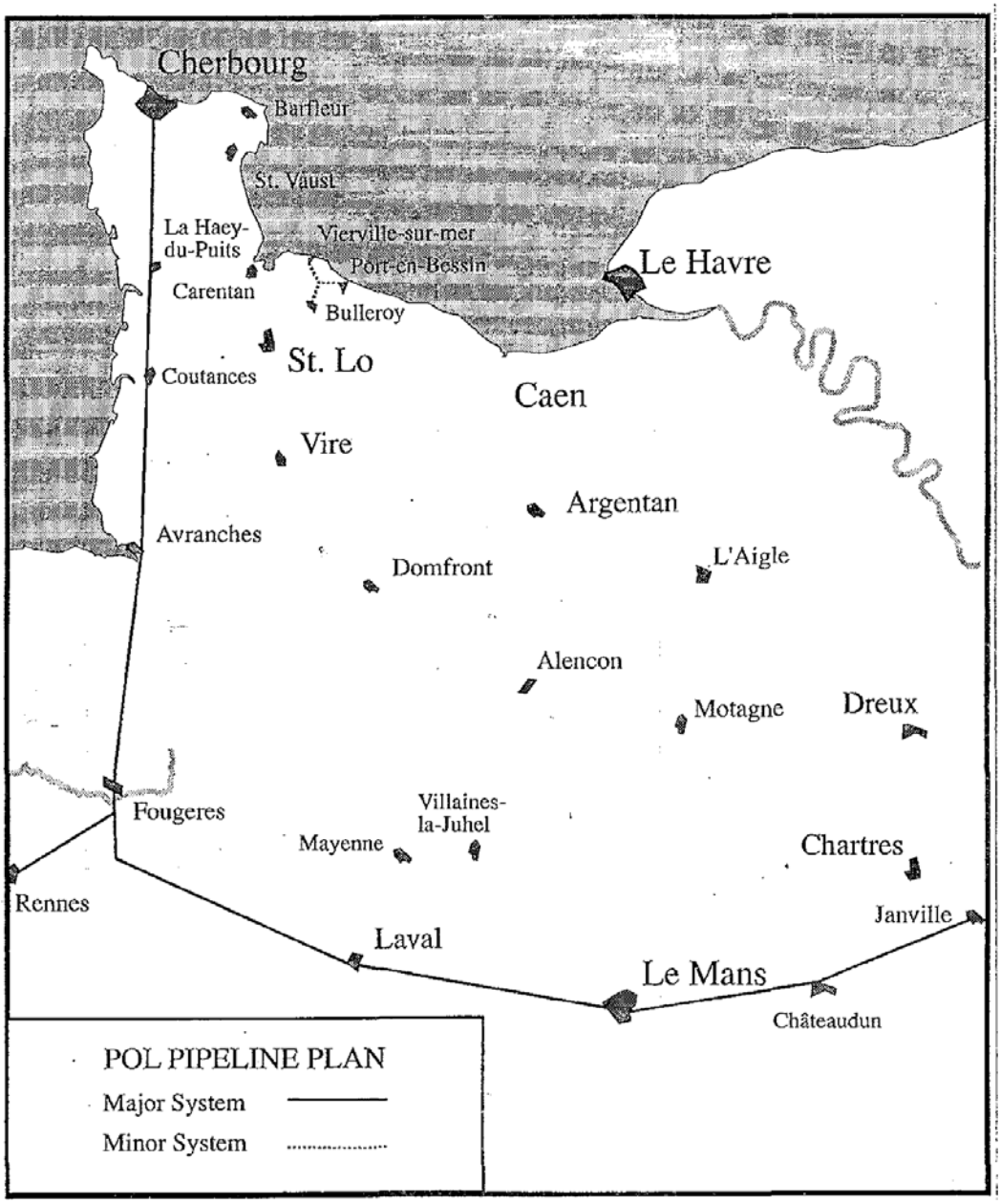
Source: Albert Norman, *Operation Overlord: Design and Reality* (Harrisburg, PA: the Military Service Publishing Company, 1952), 190.

Appendix F: Actual Allied Advance



Source: Albert Norman, *Operation Overlord: Design and Reality* (Harrisburg, PA: the Military Service Publishing Company, 1952), 200.

Appendix G: POL Systems in France as of September 1944



Source: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 43.

Appendix H: First Army Ammunition Situation, D+41 (17 July 1944)

Weapon	**Rounds per Weapon per Day, D+41**	**Rounds per Weapon per day, D-Day**
60 mm (HE)	25	50
3 inch gun (HE)	5	10
90 mm (HE)	10	20
105 mm (HE)	10	15
105 mm tank M4	10	25
105 mm M2	22	45
155 mm gun M1	10	20
155 mm howitzer M1	15	30
4.5 inch gun	15	30
8 inch howitzer	3	7
240 mm howitzer	0	0
8 inch gun	7	14

Source: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 85.

Appendix I: Planned vs. Actual French Port Liberation Dates and Capacities, D-Day to D+60

Captured			Capacity (Tons per Day)			
Port	Planned	Actual	D+30 Planned	D+30 Actual	D+60 Planned	D+60 Actual
OMAHA Beach	June 6	June 6	6,000	12,000	5,000	10,000
MULBERRY A	June 6	June 6	5,000	-	5,000	-
Isigny	June 6	June 6	500	500	500	1,300
Grandcamp	June 6	June 6	300	500	300	900
UTAH Beach	June 6	June 6	4,500	8,000	4,000	6,000
St. Vaast	June 8	June 23	1,100	-	1,100	1,300
Barfleur	June 12	June 23	1,000	-	1,000	640
Cherbourg	June 14	June 27	6,000	-	7,000	5,600
Granville	June 23	August 2	700	-	1,500	-
St. Malo	July 1	August 18	900	-	2,500	-
Brest	July 26	Sept 17	-	-	1,800	-
Rade de Brest	July 26	Sept 17	-	-	1,440	-
Lorient	July 26	-	-	-	800	-
Quiberon Bay	July 16	-	-	-	4,000	-
St. Brieuc	July 16	Aug 14	-	-	-	-
Morlaix	July 16	Aug 14	-	-	-	-
Totals	**-**	**-**	**26,000**	**21,000**	**35,940**	**25,740**

Source: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 47.

Appendix J: Planned vs. Actual French Port Liberation Dates and Capacities, D-Day to D+120

Captured			Capacity (Tons per Day)			
Port	Planned	Actual	5 August Planned	5 August Actual	4 October Planned	4 October Actual
OMAHA	6 June	6 June	5,000	10,000	5,000	4,300
MULBERRY A	6 June	6 June	5,000	-	5,000	-
Isigny	6 June	6 June	500	1,300	500	1,000
Grandcamp	6 June	6 June	300	900	300	-
UTAH	6 June	6 June	4,000	6,000	4,000	3,300
St, Vaast	8 June	23 June	1,100	1,300	1,100	1,400
Barfleur	12 June	23 June	1,000	640	1,100	1,300
Cherbourg	14 June	27 June	7,000	5,600	8,000	10,000
Granville	23 June	2 August	1,500	-	2,500	640
St. Malo	1 July	18 August	2,500	-	3,000	-
Brest	26 July	17 Sept	1,800	-	3,600	-
Rade de Brest	26 July	17 Sept	1,440	-	1,700	-
Lorient	26 July	-	800	-	2,250	-
Quiberon Bay	16 July	-	4,000	-	9,000	-
St. Brieuc	16 July	14 Aug	-	-	1,000	1,000
Morlaix	26 July	14 Aug	-	-	1,800	3,000
Totals	**-**	**-**	**35,940**	**25,740**	**49,750**	**25,940**

Source: Steve R. Waddell, *United States Army Logistics: The Normandy Campaign, 1944* (Westport, CT: Greenwood Press, 1994), 117.

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[27] "Organization and Functions of the Communications Zone," chapter 4, section 17, 32.

[28] "Organization and Functions of the Communications Zone," chapter 4, section 17, 32.

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[32] Norman, 205.
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[38] Waddell, 45.
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[44] "Supply and Maintenance on the European Continent," 40.
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[46] Waddell, 123.
[47] Norman, 204.
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[49] Magruder, 5.
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[51] Waddell, 77.
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